RPT-233

Fiscal Year 2005 Remedy Performance Summary Report for the Final Groundwater Remediation, Test Area North, Operable Unit 1-07B

August 2006

Idaho Cleanup Project

The Idaho Cleanup Project is operated for the
U.S. Department of Energy by CH2M◆WG Idaho, LLC

RPT-233
Rev. 0
Project No. 23339

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August 2006

Idaho Cleanup Project
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14516

ABSTRACT

This remedy performance monitoring report evaluates progress of the three-component remedy implemented for the trichloroethene groundwater plume at Test Area North (TAN), Operable Unit 1-07B of the Idaho National Laboratory. Overall, each component is effectively operating, resulting in an efficient total plume remedy.

In situ bioremediation operations in the hot spot have reduced volatile organic compound flux to numerous monitoring locations except one downgradient location (TAN-28). Ongoing operations include injections into multiple wells, to increase electron donor distribution and target reduction in volatile organic compound flux to TAN-28.

In the medial zone, a rebound test is being conducted to determine whether the reduction in volatile organic compounds from pump-and-treat operations is permanent or temporary. Fourteen months following shutdown, trichloroethene concentrations appear to have reached equilibrium concentrations. Pump and treat operations will be restarted at the completion of the rebound test in March 2007. Data gathered during the remainder of the rebound test and following startup will be used to evaluate future remedial actions in the medial zone.

Data gathered for evaluation of monitored natural attenuation in the distal zone of the plume indicates that trichloroethene concentrations are trending in a pattern consistent with model-predicted peak breakthrough curves. Continued monitoring has shown no detected migration of radionuclides from the hot spot and no plume expansion.

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ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COD	chemical oxygen demand
DCE	dichloroethene
DOE-ID	U.S. Department of Energy Idaho Operations Office
FY	fiscal year
GWTF	Groundwater Treatment Facility
ICDF	Idaho CERCLA Disposal Facility
ICP	Idaho Cleanup Project
ID	identification
INEEL	Idaho National Engineering and Environmental Laboratory
ISB	in situ bioremediation
IWTS	Integrated Waste Tracking System
LDR	land disposal restriction
MCL	maximum contaminant level
MNA	monitored natural attenuation
NA	not applicable
NPTF	New Pump and Treat Facility
OU	operable unit
PPE	personal protective equipment
TAN	Test Area North
TCE	trichloroethene
TSF	Technical Support Facility
USC	*United States Code*
USGS	United States Geological Survey
VOC	volatile organic compound

Fiscal Year 2005 Remedy Performance Summary Report for the Final Groundwater Remediation, Test Area North, Operable Unit 1-07B

1. INTRODUCTION

The purpose of this report is to evaluate progress of the three-component remedy implemented for the trichloroethene (TCE) groundwater plume located at Test Area North (TAN), Operable Unit (OU) 1-07B of the Idaho National Laboratory. Preparation of remedy performance summary reports is outlined in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004). The remedy performance summary report schedule is annual for the first 5 years and periodic thereafter. Annual reports have been completed for the past three years (Fiscal Year [FY] 2002 [INEEL 2003a]; FY 2003 [ICP 2004]; and FY 2004 [ICP 2006a]) and this report for FY 2005 marks the fourth of the five planned annual reports.

Each component of the remedy has specific objectives designed to address the different zones of the plume (Figure 1). Performance is assessed based on (1) achieving the individual objectives of each component and (2) examining how the remedial components are working together to remediate the entire contaminant plume. The progress of each component is as follows:

- **In Situ Bioremediation for the Hot Spot**: In situ bioremediation (ISB) operations (1999 through present) have reduced volatile organic compound (VOC) flux to numerous locations, with the exception of flux to the downgradient location of TAN-28. Ongoing operations using multiple injection wells during FY 2006 have and will continue to increase electron donor distribution to create a biologically active zone that encompasses more of the residual source area and targets reduction of VOC flux to TAN-28.

- **Pump-and-Treat for the Medial Zone**: During New Pump and Treat Facility (NPTF) operations (October 2001 through March 2005), a rapid decline followed by leveling out of TCE concentrations to approximately 100 μg/L prompted the planning and initiation of a rebound test to determine whether the reduction of TCE is permanent or temporary. Preliminary results during FY 2006 suggest that medial zone TCE concentrations have reached equilibrium concentrations between 150 and 250 μg/L.

- **Monitored Natural Attenuation for the Distal Zone**: The TCE concentrations are trending in a pattern consistent with model-predicted peak breakthrough curves; no migration of radionuclides from the hot spot has been detected; and continued monitoring has not shown plume expansion.

2. HOT SPOT

The hot spot was defined as the area around TSF-05 and TAN-25 where historic TCE concentrations were greater than 20,000 μg/L (INEEL 1997). The stimulation of indigenous microbes to degrade TCE to innocuous end products via anaerobic reductive dechlorination has been sustained in the hot spot since 1999, resulting in TCE concentrations near the maximum contaminant level (MCL) of 5 μg/L within the biostimulated area.

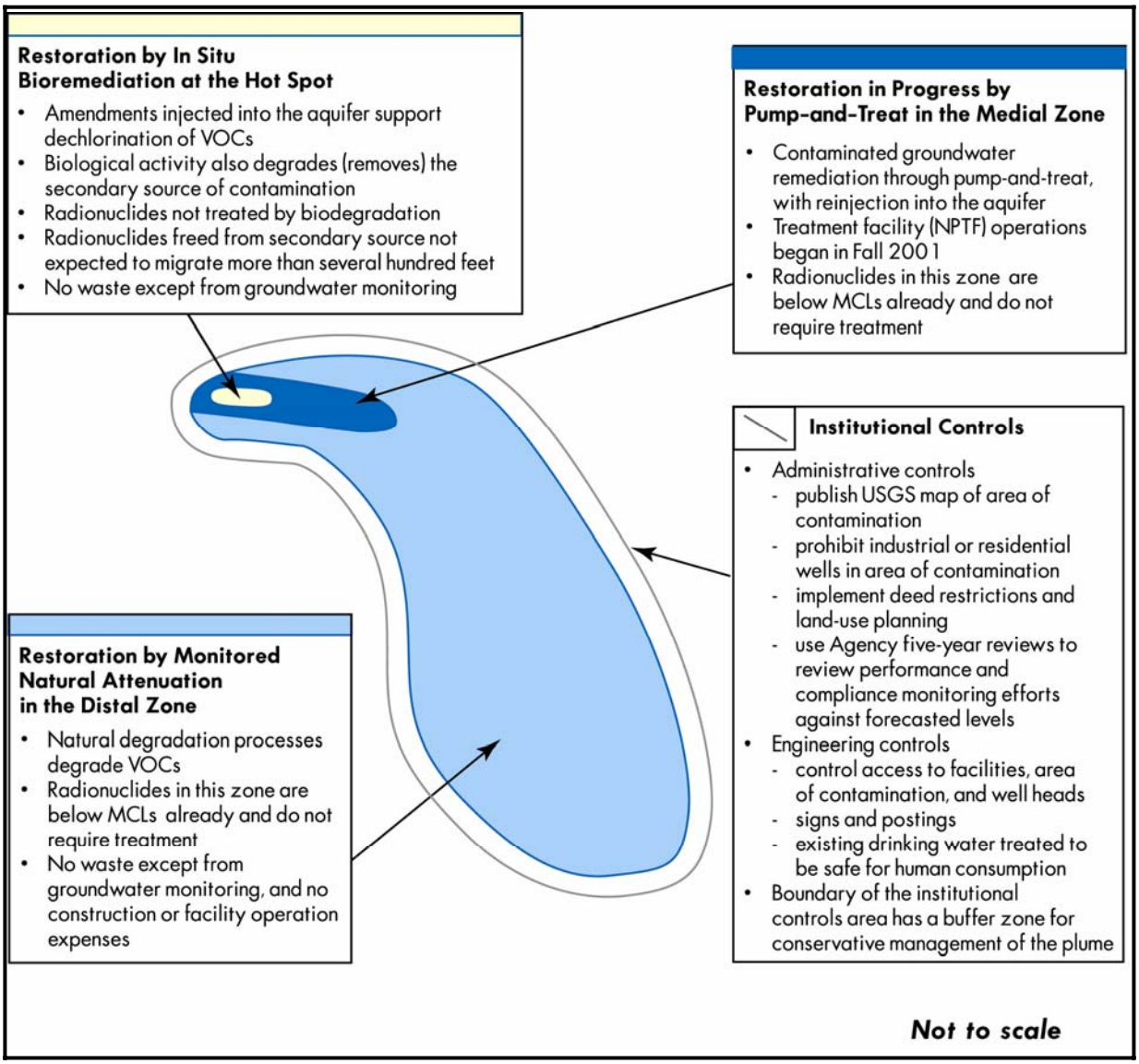

Figure 1. Conceptual illustration of the three zones of the trichloroethene plume.

As stated in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004), the ISB remedy is being implemented under three operational periods that focus on achieving specific objectives. These objectives include (1) initial operations to reduce the flux of VOCs from the hot spot in the downgradient direction, (2) optimization operations to reduce the flux of VOCs from the hot spot in the crossgradient direction while maintaining VOC flux reduction in the downgradient direction, and (3) long-term operations to achieve hot spot source degradation while maintaining reduction in VOC flux from the hot spot in the downgradient and crossgradient directions. Current hot spot operations are conducted under the initial operations phase of the remedy. The following subsections describe progress toward meeting the objectives of initial operations and include evaluation of ISB performance (Section 2.1), which provides context for the future ISB injection strategy optimization designed to reduce flux of contaminants in the downgradient direction (Section 2.2).

2.1 In Situ Bioremediation Performance Evaluation

The objectives of ISB performance are evaluated by determining progress toward reducing the flux of VOCs from the hot spot (Section 2.1.1). However, reducing VOC flux is a function of the total mass remaining in the residual source; therefore, depletion of contaminant mass within the residual source (Section 2.1.2) also is evaluated for ISB performance.

2.1.1 Reducing Volatile Organic Compound Flux

The objectives of ISB initial and optimization operations are to reduce the flux of VOCs from the hot spot in the downgradient and crossgradient directions. Through the end of FY 2005, electron donor injections into TSF-05 and subsequent degradation of contaminants within the hot spot have resulted in significant reductions in VOC concentrations at many surrounding monitoring wells (Figure 2). However, the biologically active zone produced from these injections does not encompass the entire residual source area (Figure 2). Therefore, VOC flux continues to one downgradient location (TAN-28).

A comprehensive analysis of groundwater monitoring data illustrates substantial reductions in TCE concentrations in the wells surrounding the residual source area which include the upper aquifer wells (TAN-37A, TAN-10A, TAN-27, and TAN-D2; Figure 2) and the deep aquifer wells (TAN-26, TAN-37C, and TAN-30A; data shown in the ISB annual report [ICP 2006b]). These declining trends demonstrate success in reduction of flux from the residual source area to these locations. Reduction of VOC flux in the downgradient direction will be determined by concentrations at the TAN-28 and TAN-30A wells. While reductions in TCE concentrations have been achieved at TAN-30A, TCE concentrations at TAN-28 have not shown a declining trend (Figure 2). Therefore, the focus of future ISB operations at TAN will be the reduction of VOC concentrations at TAN-28.

2.1.2 Depletion of Contaminant Mass within the Residual Source

The VOC flux from the hot spot is a function of the total contaminant mass within the residual source and the rate at which those contaminants dissolve to the aqueous phase where they are accessible for biological degradation to ethene. The residual source extends approximately 100 ft radially from TSF-05 (Figure 2) beyond the boundaries of the hot spot.

To evaluate TCE mass removal from the residual source to the aqueous phase, changes in total VOC molar concentrations are evaluated. Total VOCs (TCE, *cis*-dichloroethene [DCE], *trans*-DCE, vinyl chloride, and ethene) are used to infer TCE mass during ISB operations, because reductive daughter products (*cis*-DCE, vinyl chloride, and ethene) are the primary constituents observed. In order to assess the total mass of TCE dissolved from the source material, the molar concentrations for total VOCs are evaluated as the indicator for mass of TCE. Substantial increases in the total VOCs infer enhanced mass transfer from the residual source to the aqueous phase.

Evaluation of total VOCs in a historical context provides a tool to assess impact of hot spot remedial actions on overall source strength. Because total residual source mass is not known, this might be the only evaluation technique available to assess overall reduction in TCE source. Total VOCs measured in TSF-05A and TSF-05B (Figure 3) over the entire period of remedial activities show three general responses that correlate to specific remedial activities conducted within the residual source area:

- **Response 1: TSF-05 Sludge Removal and Groundwater Treatment Facility Operations**: The first remedial actions conducted at TAN included TSF-05 sludge removal (six removal activities are shown on Figure 3 from 1990 to 1998) and operation of the Groundwater Treatment Facility (GWTF; 1995–1998). The best interpretation of this limited data set is that these activities removed the most readily accessible source material resulting in declines in total VOC concentrations (Response 1; Figure 3; the dashed lines bound the upper and lower limits of the TCE concentrations). These declines resulted from removal of a relatively large percentage of contaminant mass. Removal of additional source material becomes increasingly difficult, because remaining contaminants are located beyond the reach of mechanical techniques.

- **Response 2: ISB using Sodium Lactate**: The onset of ISB via sodium lactate injections enhanced dissolution of TCE relative to concentrations observed prior to ISB activities. In addition, distribution of electron donor resulted in efficient degradation of TCE to ethene. Total VOCs, observed primarily as *cis*-DCE and ethene, increased for approximately 2 years (1999–2000). The total mass of VOCs decreased during the next 3 years (2001–2003) as the readily accessible TCE within the residual source material was degraded (Response 2; Figure 3). This trend was identified as a point of diminishing effectiveness of sodium lactate for the remaining contaminants within the residual source.

- **Response 3: ISB using Whey Powder**: Laboratory data have shown that high concentrations of whey powder enhance the effective solubility of TCE to a much greater degree than sodium lactate (ICP 2006b). The use of whey powder injections at TAN resulted in increased total VOCs (Response 3; Figure 3 inset), suggesting that more contaminant mass was being dissolved and degraded. Overall, implementation of ISB using both sodium lactate and whey powder increased the total contaminant mass degraded within the residual source.

Each response from the remedial activities shows a decrease in the total mass of contaminants measured at TSF-05. These decreases equate to an overall declining trend in the residual source strength.

2.2 In Situ Bioremediation Injection Strategy Optimization

Electron donor injections using TSF-05 have not achieved sufficient distribution to achieve the objectives of ISB initial and optimization operations (reduce flux of VOCs from the hot spot in the downgradient and crossgradient directions). The ISB injection system has the capability to inject into three wells (TSF-05, TAN-31, and TAN-1859; Figure 2). Therefore, the steps for optimization of the injection strategy include (1) enhance the biologically active zone around TAN-31 and TAN-1859, (2) maintain the biologically active zone around TSF-05, and (3) enhance electron donor distribution using two-well simultaneous injections (ICP 2006b).

Preliminary results following three monthly single well injections into TAN-31 and TSF-05 during FY 2006, show progress toward meeting the ISB objectives. These injections distributed electron donor farther radially (to TAN-D2) than had been observed following injections into only TSF-05. An increase in contaminant concentrations within the residual source area was also observed, suggesting higher mass dissolution and subsequent biological degradation.

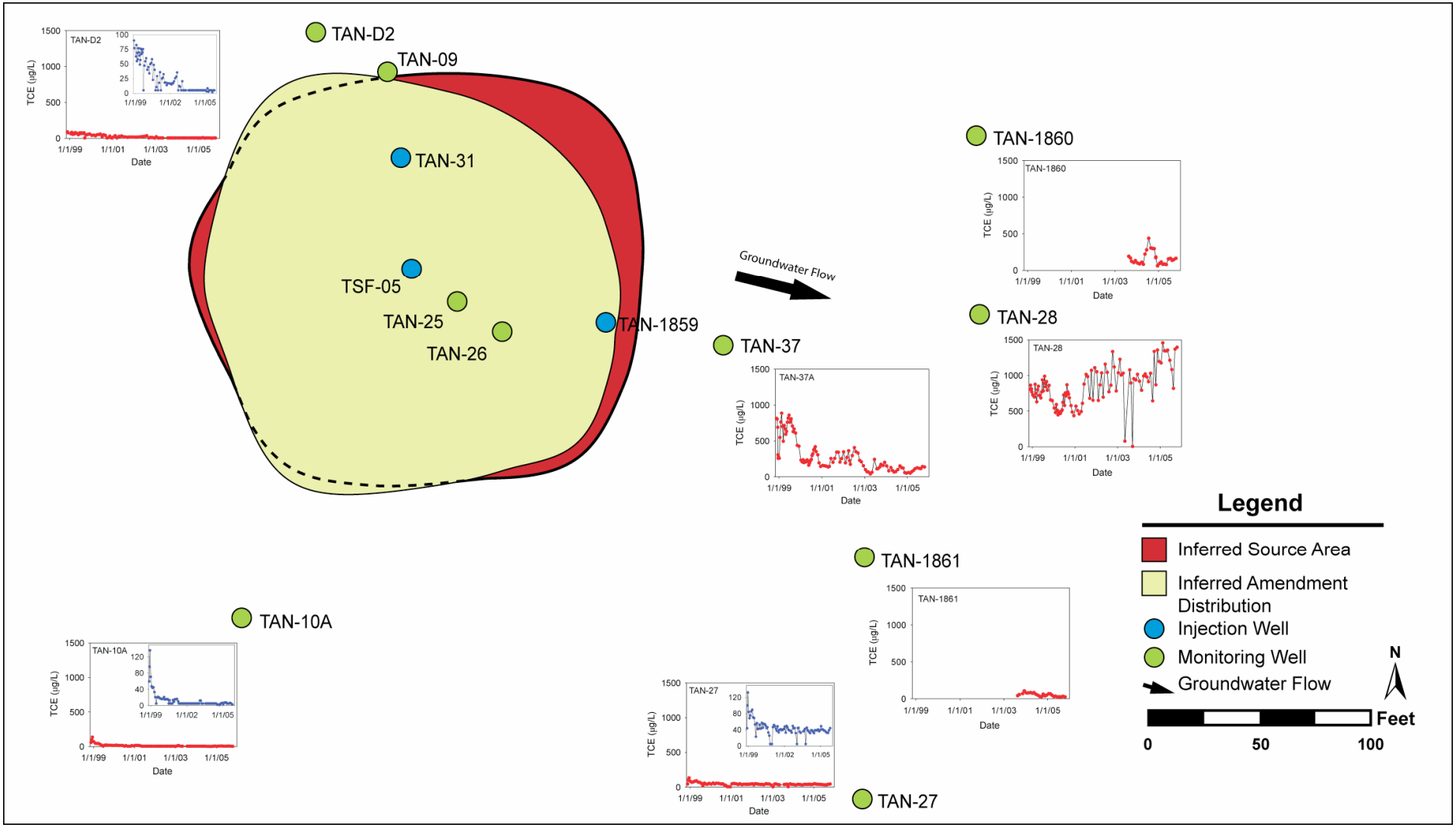

Figure 2. Trichloroethene mass concentrations illustrating the effect of in situ bioremediation on transport of trichloroethene within the upper aquifer (sampling locations above 280 ft below ground surface) outside the hot spot, 1999–2005.

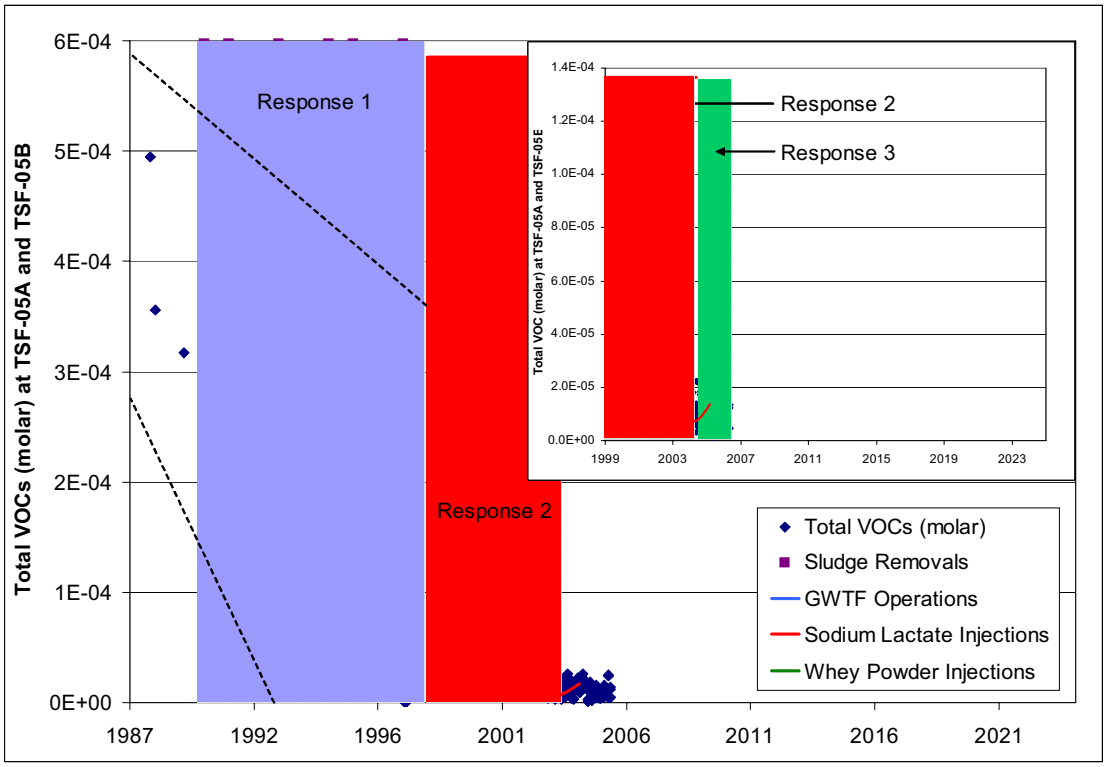

Figure 3. Total volatile organic compound concentrations at TSF-05A and TSF-05B.

3. MEDIAL ZONE

The medial zone was defined as the portion of the plume where historic TCE concentrations were between 1,000 and 20,000 µg/L (INEEL 1997). As stated in the *Record of Decision Amendment Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action* (DOE-ID 2001), pump-and-treat was selected with the objective to treat extracted, contaminated water using air stripping to reduce VOCs in the medial zone to below MCLs. The NPTF has been operating since October 2001 and was designed to prevent groundwater contaminated at or above 1,000 µg/L TCE from migrating downgradient of the medial zone.

As shown in Figure 4, TCE concentrations in medial zone wells located downgradient of TAN-29 (i.e., outside of the influence from ISB operations and within the NPTF capture zone) steadily declined and were below 1,000 µg/L (DOE-ID 2001) prior to the start of NPTF operations. Following the start of NPTF operations in October 2001, TCE concentrations rapidly declined during the first year of operations and leveled out between 50 to 150 µg/L during the second and third years of operations. As a result of TCE concentrations leveling out at an order of magnitude lower than the accepted level for monitored natural attenuation (MNA) (1,000 µg/L; Figure 4), a rebound test was initiated to evaluate the effectiveness of the NPTF in reducing TCE concentrations and determine whether the TCE concentration reduction is temporary or permanent.

The NPTF was shut down in March 2005 for the medial zone rebound test. To date (May 2006), monitoring has been conducted at seven wells for 14 months (Figure 5). The TCE concentrations in the upgradient well (TAN-29) fluctuated between 800 to 1,000 µg/L prior to the start of the rebound test and

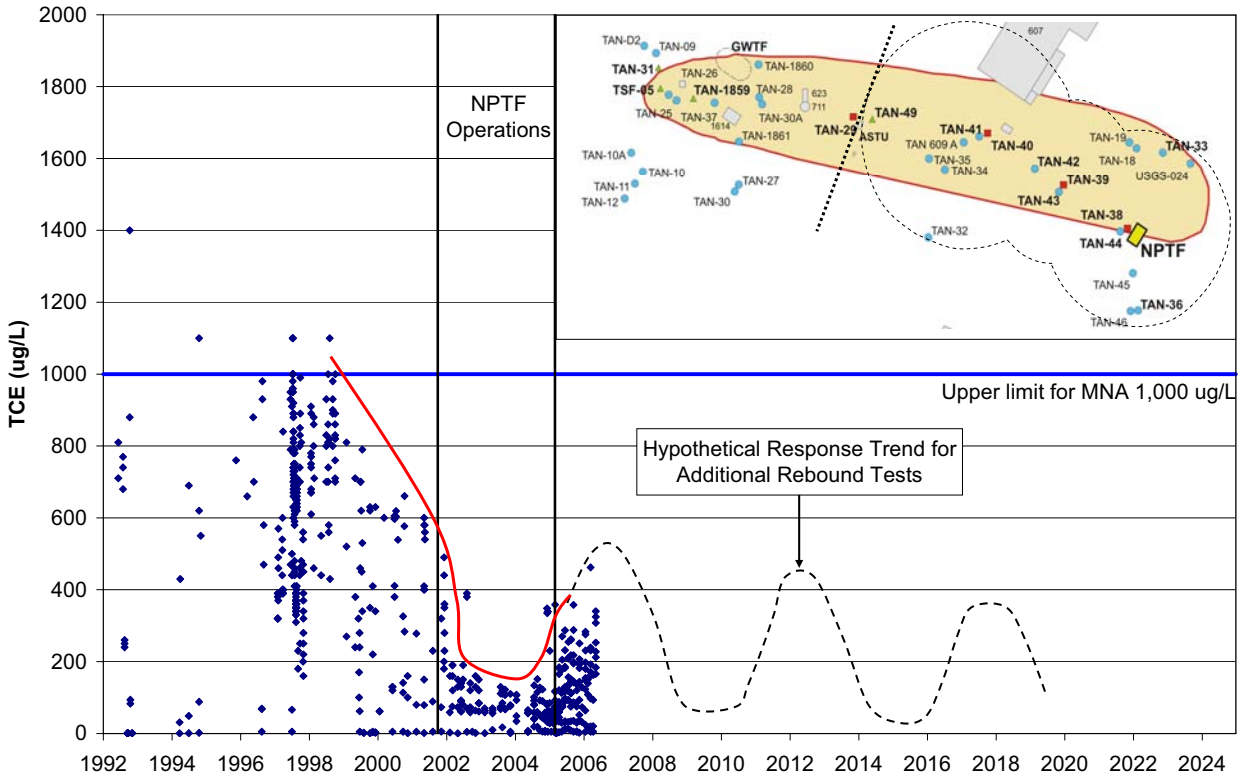

Figure 4. Trichloroethene concentrations in medial zone wells located downgradient of TAN-29. The capture zone of the New Pump and Treat Facility is shown by the dashed circular lines on the inset map.

have declined during the rebound test. The VOC concentrations at the axial (TAN-41, TAN-42, and TAN-43) and restart (TAN-44, TAN-33, and TAN-36) wells appear to have reached equilibrium concentrations with TCE between 150 to 250 µg/L for all wells except the TAN-42 axial well. The TCE concentrations in TAN-42 have been variable throughout the rebound test. As a best management practice, the sampling frequency for the final 12 months of the rebound test has been changed from every 3 months to every 2 months to closely monitor this variablility. Overall, there was no rapid rebound of TCE in any of the wells and concentrations at the three restart wells remain below the restart criteria (Figure 5; ICP 2005). Following completion of the rebound test in March 2007, the NPTF will be restarted.

Presently, TCE concentrations in medial zone wells (located downgradient of TAN-29 within the NPTF capture zone; Figure 4 inset) remain in a range that may be effectively treated by MNA, which is the approved strategy for areas of the plume with TCE concentrations between 5 to 1,000 µg/L. Data gathered during the remainder of the rebound test and following startup of the NPTF in March 2007 will be used to determine future operational strategies and remedial actions in the medial zone. Possible future operational strategies could include iterative NPTF operations implemented by either operating the NPTF only 4 days a week instead of 7 days or by conducting additional rebound tests. Figure 4 shows a hypothetical TCE response trend for conducting additional rebound tests. Following restart of the NPTF in March 2007, a declining TCE trend is anticipated. Hypothetical results of a second and third rebound test are shown with continued declines and increases in TCE concentrations; however, an overall decrease in the effectiveness of the NPTF would be expected (as shown).

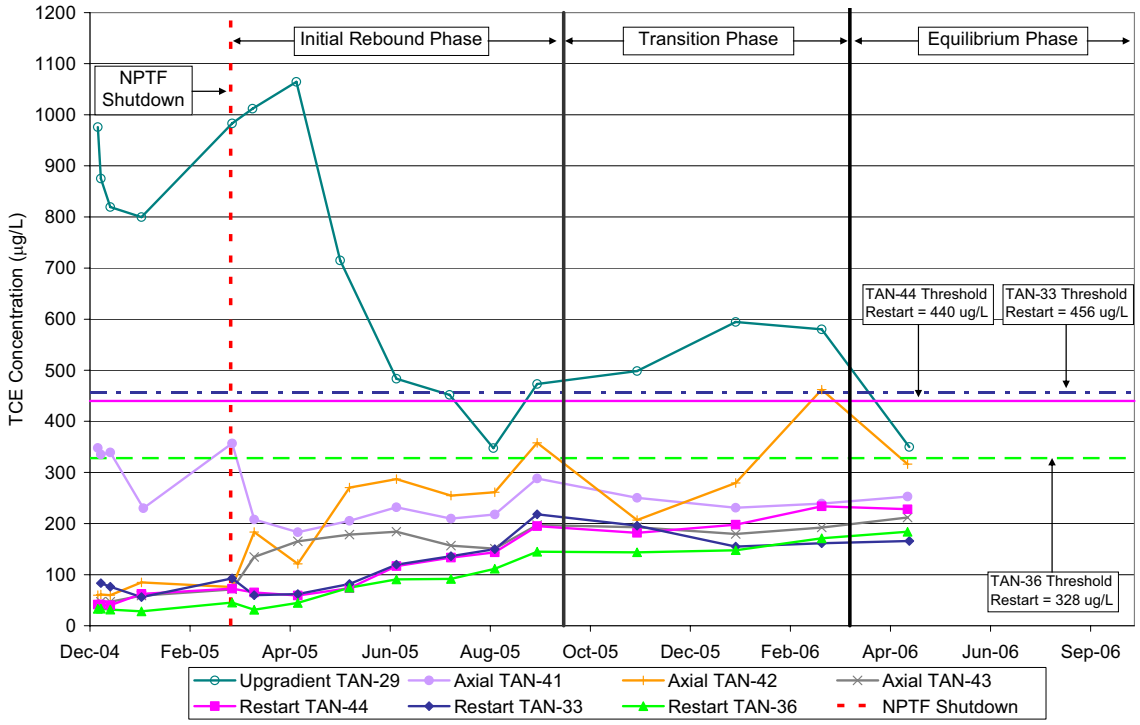

Figure 5. Trichloroethene concentrations in the medial zone rebound test wells.

4. DISTAL ZONE

The remedy for the distal zone (DOE-ID 2001) was identified as MNA. The distal zone was defined as the location where historic TCE concentrations were between 5 and 1,000 µg/L (INEEL 1997). The *Monitored Natural Attenuation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2003) outlines five technical components for evaluation of MNA. The status of each component is as follows:

1. **Verifying Biological Mechanisms**: This component was completed in FY 2003 (DOE-ID 2004) and the results show that conditions within the aquifer are conducive to aerobic cometabolism.
2. **Updating the Numerical Transport Model**: This component was completed in FY 2003 (INEEL 2003b) and the numerical model results will be used to predict the time period during which peak breakthrough will occur.
3. **Evaluating TCE Data**: Data collected during FY 2005 indicate that TCE concentrations are trending in a pattern consistent with model-predicted peak breakthrough curves (ICP 2006c).
4. **Evaluating Radionuclide Data**: The FY 2005 radionuclide data indicate no migration of Sr-90 or Cs-137 from the source area. Tritium and U-234 were not detected above the MCLs (ICP 2006c).
5. **Monitoring the Size of the Contaminated Plume**: The FY 2005 TCE concentrations indicate that the plume has not expanded (ICP 2006c).

5. COMBINED REMEDY PERFORMANCE

The purpose of this report is to evaluate progress of the three-component remedy. Monitoring results for each plume zone indicate that the three remedies are progressing toward meeting the objectives

for each zone and the overall plume remediation objectives. A progress summary for each component and the combined remedy is summarized in the following subsections.

5.1 Hot Spot

Remedial activities in the hot spot are evaluated by determining progress toward (1) reducing the flux of VOCs from the hot spot (as monitored in medial zone wells surrounding the hot spot and downgradient to TAN-29) and (2) depletion of contaminant mass within the residual source. Progress toward the remedy objectives includes the following:

1. VOC flux from the hot spot has been reduced to numerous locations, with the exception of one downgradient location (TAN-28). Ongoing operations using multiple injection wells have and will continue to increase electron donor distribution and target reduction in VOC flux to TAN-28.

2. A conceptualization of contaminant mass depletion, based on total VOC concentrations at TSF-05, is shown in Figure 6. Responses to hot spot remedial activities resulting in depletion of contaminant mass within the residual source include the following:

   a. **Response 1: TSF-05 Sludge Removal and GWTF Operations.** These remedial activities removed readily accessible source material resulting in total VOC concentration declines.

   b. **Response 2: ISB using Sodium Lactate.** ISB using sodium lactate resulted in enhanced TCE dissolution from the residual source to the aqueous phase where TCE was degraded to ethene. Although this remedial action further reduced source material; a point of diminishing effectiveness was reached.

   c. **Response 3: ISB using Whey Powder.** The results of ISB using whey powder suggest that more contaminant mass is being dissolved and subsequently degraded because total VOCs increased.

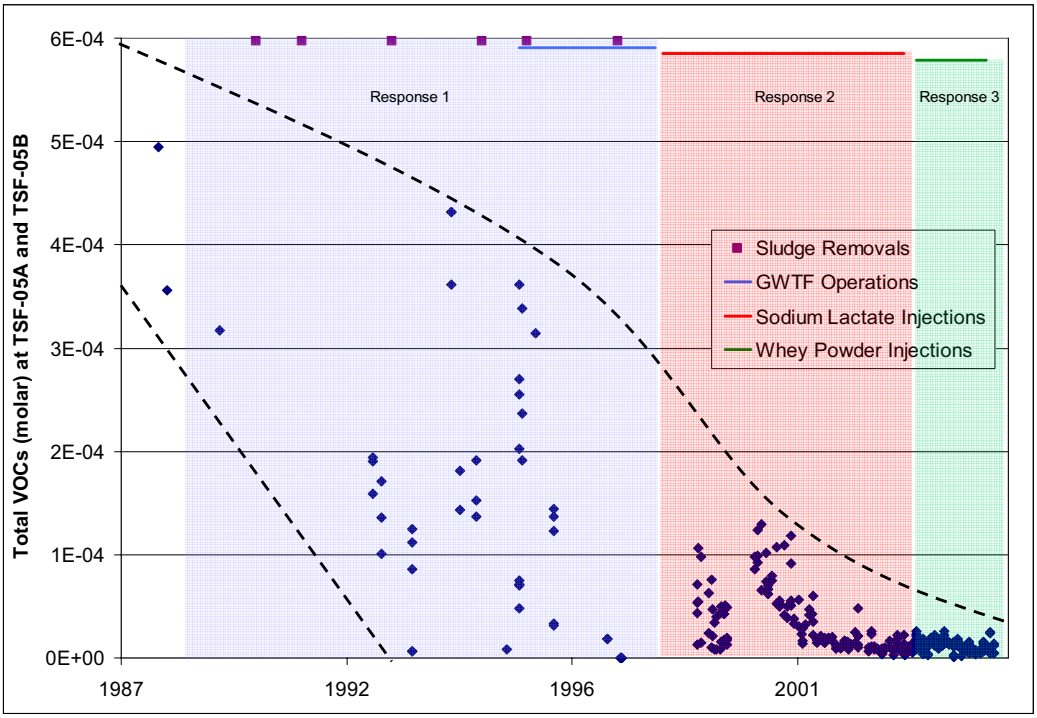

Figure 6. Conceptualization of contaminant mass depletion within the hot spot.

The remedial actions were successful and resulted in the depletion of contaminant mass within the residual source area and a subsequent reduction in VOC flux. Overall, ISB using sodium lactate and whey powder has resulted in enhanced VOC degradation from the source material and will result in a much shorter remedial timeframe.

5.2 Medial Zone

Progress of remedial activities to reduce VOC concentrations in the medial zone includes the following:

- During NPTF operations, VOC concentrations rapidly declined and then leveled out at an order of magnitude lower (100 µg/L) than the accepted TCE upper limit for MNA (1,000 µg/L; Figure 4).

- Fourteen months following NPTF shutdown for a rebound test, VOC concentrations appear to have reached equilibrium conditions with TCE concentrations between 150 to 250 µg/L (Figure 5).

- Data will be gathered during the remainder of the rebound test and following startup of the NPTF in March 2007 to evaluate future operational strategies and remedial actions in the medial zone. Possible future operational strategies could include iterative NPTF operations implemented by either operating the NPTF only 4 days a week instead of 7 days or by conducting additional rebound tests.

- In general, TCE concentrations in medial zone wells, located downgradient of TAN-29 within the NPTF capture zone, are significantly below the historically defined concentration range of 1,000 to 20,000 µg/L for the medial zone (Figure 4).

5.3 Distal Zone

Progress of MNA to reduce VOC concentrations in the distal zone includes the following:

- Presently, data collected indicate that TCE concentrations are trending in a pattern consistent with model-predicted peak breakthrough curves. However, additional data need to be collected to confirm these trends, because either not enough data have been collected or the estimated time of peak breakthrough is in the future.

- Radionuclide concentrations in the TSF-05 and TAN-25 hot spot wells show fluctuations resulting from ISB injections. However, similar fluctuations are not present in wells downgradient from the hot spot (TAN-37, TAN-28, TAN-30A, and TAN-29), thereby indicating that there has been no migration of radionuclides from the hot spot. Presently, a best management practice is being implemented to track Sr-90 concentrations at TAN-37A and TAN-37B monthly and at TAN-28 and TAN-29 quarterly.

- Wells used to monitor plume growth are sampled every 3 years. As a best management practice, TAN-57 has been monitored every year and TCE concentrations have remained below the MCL at this well.

5.4 Combined Remedy

Evaluating the interaction of the three remedy components provides a mechanism for tracking the effectiveness of the total plume-remediation strategy. For ease of discussion over the term of the remedy, the three plume boundaries (hot spot, medial zone, and distal zone) were defined based on historic TCE concentrations. Current concentrations have declined throughout the plume. This summary refers specifically to present-day TCE concentrations as seen in the historically defined zones. As originally defined, the hot spot only included the TSF-05 and TAN-25 wells; however, based on present day information, the residual source is known to extend beyond the defined hot spot boundary approximately 100 ft radially from TSF-05 (Figure 2). Within the residual source area, TCE concentrations have declined to near MCLs as a result of effective anaerobic reductive dechlorination maintained by ongoing ISB operations. The wells located in the medial zone outside of the hot spot extending downgradient to the location of TAN-29 are used to monitor ISB operations. Evaluation of TCE concentrations for these wells generally shows that flux from the hot spot has been reduced, with the exception of one downgradient location (TAN-28; Figure 2). The hot spot remedy is operating as planned and expected progress toward the remedy objectives is being made. Review of hot spot data from discovery of contamination in 1987 to the present suggests that using total VOC concentrations is a way to assess the impact of hot spot remediation actions on the strength or longevity of the residual source.

TCE concentrations in medial zone wells located downgradient of TAN-29 and within the NPTF capture zone (inset on Figure 4) are significantly below the historically defined concentration range of 1,000 to 20,000 µg/L. Fourteen months after shutdown of the NPTF, TCE concentrations within the NPTF capture zone suggest that concentrations have reached equilibrium conditions between 150 to 250 µg/L. Should this prove to be an equilibrium plateau, the current concentrations are comparable to those reported in the distal zone during August 2005 (140 µg/L in TAN-48, 209 µg/L in TAN-51, 152 µg/L in TAN-55, and 180 µg/L in TAN-54) (ICP 2006c). Data gathered during the remainder of the rebound test and following startup of the NPTF in March 2007 will be used to determine future operational strategies and remedial actions in the medial zone. The TCE concentrations in distal zone wells are trending in a pattern consistent with model-predicted breakthrough curves demonstrating that natural attenuation is occurring as predicted. Continued monitoring in wells outside and downgradient of the plume boundary demonstrate that the plume has not grown.

Presently, remedial operations are progressing toward the planned transition from a three-component remedy (ISB, NPTF, and MNA) to a two-component remedy (ISB and MNA). This transition is illustrated in Figure 2-2 of the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004) and in Figure 2-3 of the *Monitored Natural Attenuation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2003). This progression will continue to be monitored through evaluation of reducing VOC flux from the hot spot, assessing the effectiveness of NPTF operations, and performing annual distal zone monitoring.

6. CERCLA WASTE GENERATION

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.) waste was generated as a result of remedial activity implementation. This waste is stored within the OU 1-07B CERCLA storage waste area and is managed in compliance with the requirements of the *Waste Management Plan for Test Area North Final Groundwater Remediation Operable Unit 1-07B* (INEEL 2005). Table 1 summarizes the quantities, waste determination, and current disposition of waste streams generated as part of remedial activities during FY 2005.

Table 1. Summary of waste generated and stored by the Operable Unit 1-07B remedial action operations during Fiscal Year 2005.

IWTS Material Profile	Liquid	Solid	Waste Stream ID	Waste Stream	Inventory at the End of FY 2004	Quantity Generated during FY 2005	Quantity Removed during FY 2005	Inventory at the End of FY 2005	Waste Determ[a]	Ultimate Disposition[b]
3318N	x		1-07B-044	Field lab COD analytical residues	4 containers, 220 gal	1 container, 55 gal	0	5 containers, 275 gal[c]	F001, D002	Off-Site Envirocare
3320N	x		1-07B-043	Field lab nitrate analytical residues	2 containers, 110 gal	0	0	2 containers, 110 gal[c]	F001, D005, D006, D007, D009, D011	Off-Site Envirocare
3774N	x		Not yet assigned	Tracer test solution, used	1 container, 55 gal	0	0	1 container, 55 gal[c]	F001, D001, D002	Off-Site Permafix
4924N	x		Not yet assigned	Tracer test solution, unused	1 container, 5 gal	0	0	1 container, 5 gal[c]	D001, D002	Off-Site, Clean Harbor
NA	x		1-07B-022	Sampling purge water[d]	0	10,852 gal	10,852 gal	0	F001	NPTF
2277		x	1-07B-012 or 1-07B-026	Brass fittings	1 container, 20 gal	0	0	1 container, 20 gal	F001, D008	Off-Site Envirocare
1935A.R2		x	1-07B-008	Non-LDR compliant debris, bag filters, and PPE	6 containers, 330 gal	0	0	6 containers, 330 gal	F001, D007, D009, D011	Off-Site, Envirocare
1938A.R1		x	1-07B-007	Spent ion exchange resin	0	6 containers, 330 gal	6 containers, 330 gal	0	F001[e.] (<6 ppm)	ICDF

Table 1. (continued).

IWTS Material Profile	Liquid	Solid	Waste Stream ID	Waste Stream	Inventory at the End of FY 2004	Quantity Generated during FY 2005	Quantity Removed during FY 2005	Inventory at the End of FY 2005	Waste Determ[a]	Ultimate Disposition[b]
2473.R1		x	1-07B-026	LDR compliant debris, metals	1 container, 711 gal	1 container, 673 gal	0	2 containers, 1,384 gal	F001 [e.] (<6 ppm)	ICDF
2722N		x	1-07B-031	Drill cuttings	20 containers, 11,476 gal	0	0	20 containers, 11,476 gal	F001[e] (<6 ppm)	ICDF
3775N		x	1-07B-023	TSF-05 sludge	1 container, 30 gal	0	1 container, 30 gal	0	F001[f] (180 ppm)	Consolidated to material profile 4591N.R1 for disposal at ICDF
4304N		x	1-07B-008	GWTF tank sludge	8 containers, 320 gal	0	0	8 containers, 320 gal	F001[e] (<6 ppm)	ICDF

a. U.S. Environmental Protection Agency waste codes. F001 indicates trichloroethene and other spent solvents; D001 for flammability; D002 indicates corrosive waste; D005 for barium; D006 for cadmium; D007 for chromium; D008 for lead; and D011 for silver.
b. Waste is currently stored at the TAN CERCLA Waste Storage Facility.
c. Waste was disposed of during FY 2006.
d. Sampling purge water is treated at the NPTF in accordance with the *Waste Management Plan for Test Area North Final Groundwater Remediation Operable Unit 1-07B* (INEEL 2005).
e. These wastes carry only the EPA waste code for F001 at concentrations of less than 6 ppm and are LDR compliant.
f. The TSF-05 sludge was repackaged and reassigned to a new profile (4591N.R1) for disposition.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
COD = chemical oxygen demand
FY = fiscal year
GWTF = Groundwater Treatment Facility
ICDF = Idaho CERCLA Disposal Facility
ID = identification
IWTS = Integrated Waste Tracking System
LDR = land disposal restriction
NA = not applicable
NPTF = New Pump and Treat Facility
PPE = personal protective equipment
TAN = Test Area North
TSF = Technical Support Facility

7. REFERENCES

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